What it claimed is:

1. A method of creating frequency diversity in a multicarrier OFDM signal by assigning redundant copies of each data bit to a plurality of carriers to create a non-periodic bit assignment
5   wherein frequency intervals between carriers is different for each interval.

2. A method of allocating data bits to carriers for transmission in a multicarrier modulation symbol, which comprises a plurality of carriers each capable of being modulated with at least one data bit, to create frequency diversity, the method comprising the steps of,:

10

selecting a data bit;

assigning the data bit to a plurality of carriers comprising the steps of:

15   assigning the data bit to a first carrier;

assigning the data bit to a second carrier with a first carrier spacing from the first carrier;

assigning the data bit to a third carrier with a second carrier spacing from the second
20   carrier that is different from the first carrier spacing; and

repeating the steps of selecting data bits and assigning data bits to carriers until all data bits are assigned to carriers and all carriers have a data bit assigned.

25   3. The method of claim 2 wherein each carrier spacing for each data bit is different from every other carrier spacing for the data bit.

4. The method of claim 3 wherein the ratio of carriers to data bits is 16.

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5. A method of creating frequency diversity in a multicarrier signal by assigning redundant copies of each data bit of a 32-bit value among 256 transmitted carriers, each carrier corresponding to a bin number, the assigning performed according to the following table:

Table 1
Bin Number Assignment for 16 way Frequency Diversity

Bit Number	Bin Number															
0	0	17	35	54	74	95	101	124	132	157	167	178	206	219	233	248
1	1	18	36	55	75	80	102	125	133	158	168	179	207	220	234	249
2	2	19	37	56	76	81	103	126	134	159	169	180	192	221	235	250
3	3	20	38	57	77	82	104	127	135	144	170	181	193	222	236	251
4	4	21	39	58	78	83	105	112	136	145	171	182	194	223	237	252
5	5	22	40	59	79	84	106	113	137	146	172	183	195	208	238	253
6	6	23	41	60	64	85	107	114	138	147	173	184	196	209	239	254
7	7	24	42	61	65	86	108	115	139	148	174	185	197	210	224	255
8	8	25	43	62	66	87	109	116	140	149	175	186	198	211	225	240
9	9	26	44	63	67	88	110	117	141	150	160	187	199	212	226	241
10	10	27	45	48	68	89	111	118	142	151	161	188	200	213	227	242
11	11	28	46	49	69	90	96	119	143	152	162	189	201	214	228	243
12	12	29	47	50	70	91	97	120	128	153	163	190	202	215	229	244
13	13	30	32	51	71	92	98	121	129	154	164	191	203	216	230	245
14	14	31	33	52	72	93	99	122	130	155	165	176	204	217	231	246
15	15	16	34	53	73	94	100	123	131	156	166	177	205	218	232	247

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6. A method of transmitting a message comprising bits of data using a plurality of multicarrier modulation symbols to create frequency diversity, each symbol comprising a plurality of carriers capable of being modulated with at least one data bit, the method comprising the steps of,:

10   determining the number of data bits transmitted in each symbol;

selecting from the message a number of data bits equal to the number of bits transmitted in each symbol; and

15   assigning each data bit to a plurality of carriers wherein the separation of the carriers used to transmit each data bit is non-periodic.

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7. The method of claim 6 wherein the assignment of each data bit to carriers is according to Table 1.

8. The method of claim 6 wherein the assignment of each data bit to carriers is according to

5   Table 3.

9. An OFDM modulator for transmitting a binary data word in a symbol having frequency diversity comprising:

10   a ramp counter for producing a series of bin number values;

a look up table for mapping the bin number values to bit select values, the look up table comprising entries that produces assignment of bits to non-periodic carriers within the symbol;

15   a data selector for selecting at least one bit from the binary data word according to each bit select value; and

an amplitude mapper for producing complex I and Q amplitudes for the selected bits.

20   10. The OFDM modulator of claim 9 wherein the look up table contents is shown in Fig. 2.